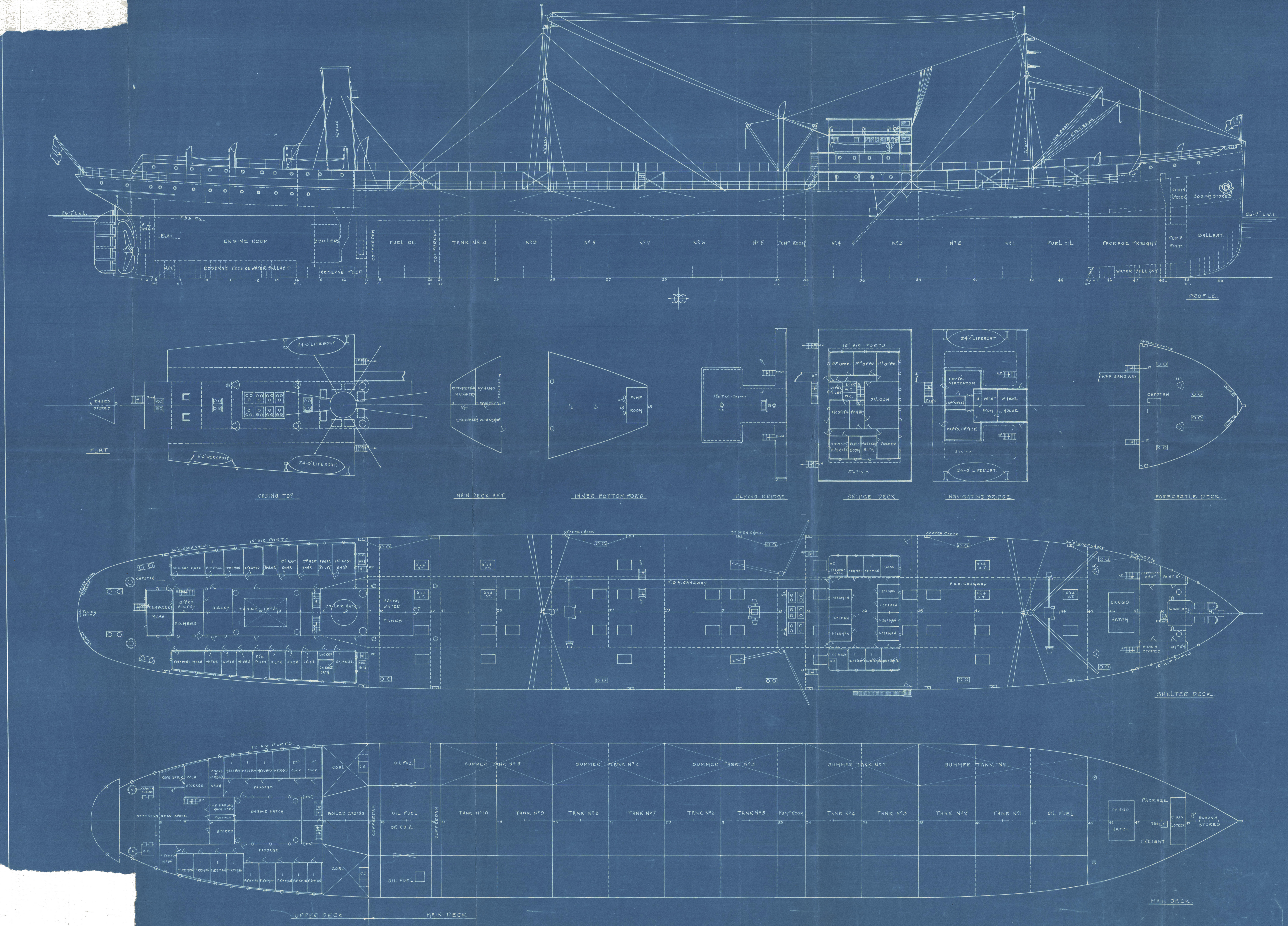
Sun S.B. Co. No 39.

General Arrangement

S.S. "J.N. Pew"

Report No 4213



ALTERATIONS

NO.	DATE	DESCRIPTION	APPROVED

MATERIAL

PRINCIPAL DIMENSIONS

LENGTH B.P.	480'-0"
BEAM (MOLDED.)	65'-9"
DEPTH (MOLDED TO SHELTER DECK)	37'-0"

CHARGE

ACTION

"S.S. J.N. PEW"

PLAN PRINTS

PRINT NO.	DEPT.	NO. PTS.	PRINT NO.	DEPT.	NO. PTS.	PRINT NO.	DEPT.	NO. PTS.	PRINT NO.	DEPT.	NO. PTS.
Cont.	#39		31	81	1						
1	78	1		14 apr 21							
2	78H	1	32	Maril	1						
3	88	1		18 apr 21							
4	38	1									
5-8	45	4									
9-10	82	2									
11-12	36	2									
13	33	1									
14-15	65	2									
16	68	1									
17	67	1									
18	40	1									
19	46-CX	1									
20-21	73	2									
22	97	1									
	8 Dec. 20										
23-26	45	4									
	8 Dec 20										
27	78H	1									
	29 Dec 20										
28	Reed	1									
	7 Jan 21										
[illegible]	47										
29-30	Maril	2									
	8 apr 21										

HULL DIVISION

GENERAL ARRANGEMENT.

SCALE—ARRANG'T = 1/16" = 1 FT.
SCALE—DETAIL = " 1 FT. DATE 11-20-20

DEL'N	TRACED	CHECKED	APPROVED
A.L.T.	A.L.T.	[illegible]	[illegible signature]

SUN SHIPBUILDING CO.

CHESTER, PA. U.S.A.

DR. No 39-700A-B.

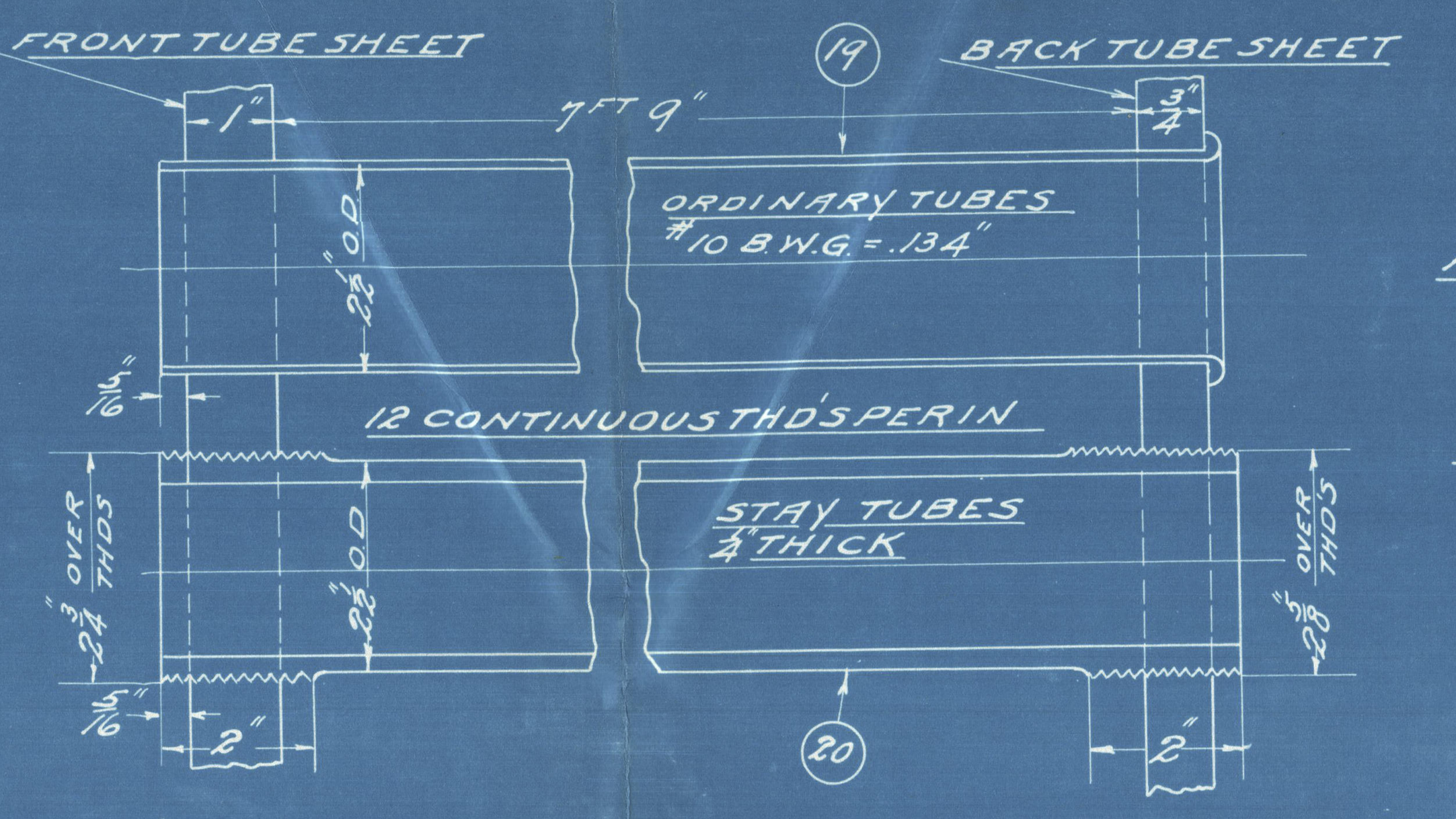
Sun S.B.Co. No 39.

Midship Section

S.S. "J. N. Pew"

Report No 4213.

STIFF. 22'-6" OFF ℄
STIFF. 15'-0" OFF ℄
STIFF. 7'-6" OFF ℄
SHELTER DK
MAIN DK
NOTE. BOTTOM, BILGE & ALL 10 RIV BKTS FLANGED
MIN. RIV. SPC IN BKTS. 3½" - ⅞" DIA RIVS.
ALL BKTS BELOW MAIN DECK .44" THICK
" " ABOVE " " .40" "
NOTE. IN VIEW OF LONG'T. FRAMING. BHD. LINERS TO EXTEND ONLY ¼" BEYOND TOE OF Ls FOR CAULKING & NOT TO TAKE ROW OF RIVS OUTSIDE OF Ls AS PER RULE.
TRANSVERSES SPC. 12'-0"
EQUIPMENT NO. 49066.
2 BOWER ANCHORS STOCKLESS 9563#
1 " " " 8258#
1 STREAM " " 3500#
1 KEDGE " " 1680#
300 FATHOMS OF 2 9/16" STUD CHAIN CABLE
120 " " 5¼" STEEL WIRE STREAM LINE
130 " " 6" " " TOWLINE
4-100 " " 8" CIRC. MANILA HAWSER
PRINCIPAL DIMENSIONS
LENGTH {B.P. 480'-0" / LLOYD'S 480'-6"} x 65'-9" x 37'-0" MLD. TO SH. DK.
TRANS. No. B+D-8'-0" = 94.75
LONG No. L x (B+D-8) = 45,527.
L TO D. SHELTER DK = 12.98
S.S. "J. N. PEW"
PLAN PRINTS.
HULL DIVISION
BULK OIL STEAMER 37 TYPE.
MIDSHIP SECTION.
SCALE ½" = 1 FOOT.
DATE 5-Feb-20
DEL'N. TRACED CHK'D APPROVED
SUN SHIPBUILDING CO.
CHESTER PA. U.S.A.
LLOYD'S AMENDMENTS EMBODIED
DATE 9-FEB-20
DRG. NO. S-700B-G.



BUREAU OF COMMERCE & LLOYDS RULES

PLATE % $\frac{9.9375-1.5625}{9.9375} \times 100 = 84.2\%$

RIVET % $\frac{5 \times 1.917 \times 1.75 \times 85}{9.9375 \times 1.59375} \times 100 = 90\%$

ALTERATIONS	DATE	APPROVED

CONSTRUCTED UNDER THE BOARD OF SUPERVISING INSPECTORS DEPT OF COMMERCE & LLOYDS RULES FOR 200 LBS WORKING PRESSURE

DESCRIPTION	THICKNESS	U.S. RULES	LLOYDS RULES	BOILER DATA	ONE BOILER HEATING SUR.
SHELL	1 19/32	$P=\frac{60000 \times 1.59375}{6 \times 95}+20\%=201$#	$P=\frac{21.04 \times (25.5-2) \times 84.2}{191.59375}=217$#	TUBES	2571.5 ⌀
FURNACE	21/32"	$P=\frac{15600 \times .65625}{50}=204$#	$P=\frac{1259 \times (10.5-2)}{52.3125}=204$#	FURNACES	175 ⌀
TOP HEAD PLATE	1 1/8"	$P=\frac{175 \times 18^2}{270}=210$#	$P=\frac{175 \times 18^2}{270}=210$#	COMB. CHAMB	264.6 ⌀
TOP HEAD STAY	2 13/16	$S=\frac{16.875 \times 16 \times 200}{6.2126}=8692$#	$P=\frac{10400 \times 6.2126}{16.875 \times 16}=239$#	BACK TUBE PLATE	55 ⌀
TUBE PLATE	3/4"	$P=\frac{(3.75-2.23) \times .75 \times 27000}{40 \times 3.75}=205$#	$P=\frac{3.75-2.23 \times 1750 \times 12}{40 \times 3.75}=212.8$	TOTAL H.S.	3066 ⌀
C.C. CROWN PLATE	21"/32	$P=\frac{135 \times 10.5^2}{71.19}=209$#	$P=\frac{135 \times 10.5^2}{71.19}=209$#	GRATE SUR.	66 ⌀
C.C. CROWN STAYS	1 3/4"	$S=\frac{8.375 \times 8.5 \times 200}{1.997}=7129$#	$P=\frac{7500 \times 1.997}{8.375 \times 8.5}=210$#	H.S./G.S.	46.4
WRAPPER PLATE	21"/32	$P=\frac{120 \times 10.5^2}{54.125}=244$#	$P=\frac{100 \times 10.5^2}{54.125}=203$#	CALORIMETER	13 ⌀
WRAPPER STAYS	1 3/4"	$S=\frac{8.5 \times 6 \times 200}{1.997}=5107$#	$P=\frac{7500 \times 1.997}{8.5 \times 6.}=293$#	G.S./CAL	5.07
C.C. BACK PLATE	3/4"	$P=\frac{120 \times 12^2}{68.125}=253$#	$P=\frac{100 \times 12^2}{68.125}=211$#	LENGTH OF GRATE	5 FT 6"
C.C. BACK STAYS	1 3/4"	$S=\frac{8.5 \times 8 \times 200}{1.997}=6805$#	$P\frac{7500 \times 1.997}{8 \times 8.5}=220$#		
CROWN GIRDERS	10 1/2" x 1"	$\frac{917 \times 10.5^2 \times 2}{(41.5-8.5) \times 8.375 \times 3.45}=212$#	$P=\frac{11850 \times 10.5^2 \times 2}{(40-8.5) \times 8.375 \times 40}=247$#		
BOTTOM COMB. CH.	1"	$\frac{50[(300 \times 1)-(2 \times 36.5)]}{54.5}=208$#	$P=\frac{50(300 \times 1-40)}{54.5}=238$#		
WIDE WATER SPACE FRONT	1"		$P=\frac{140 \times 16^2}{13^2}=212$#		

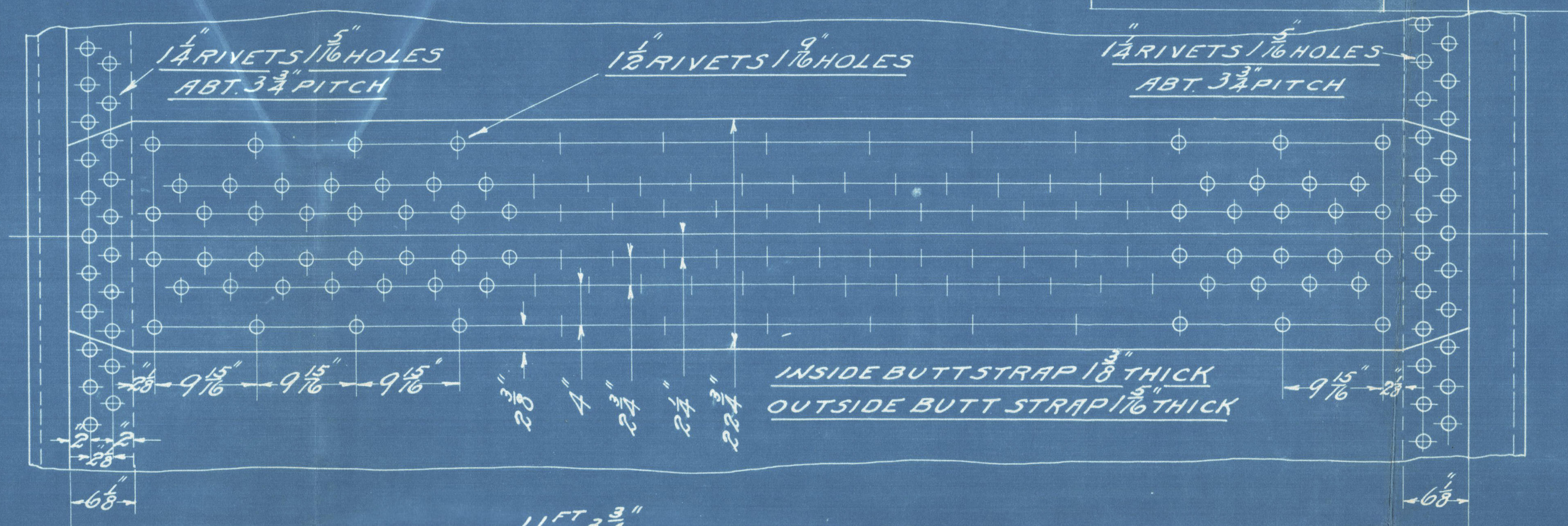
TENSILE STRENGTH OF SHELL PLATES 60,000 TO 70,000 LBS
" " " FLANGE " 55,000 TO 65,000 LBS
" " " GIRDERS 60,000 TO 70,000 LBS
WORKING PRESSURE 200# PER SQ. IN
WATER TEST 300# " " "

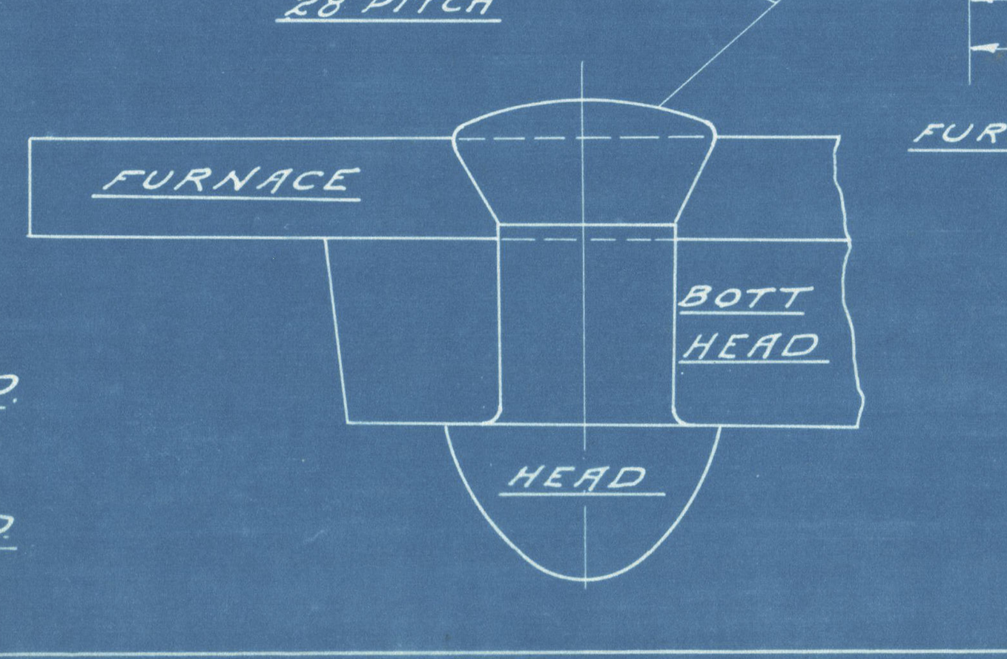
EVAPORATION 270 LBS OF WATER PER SQ. FOOT OF GRATE PER HOUR

3 1/2" TWIN SAFETY VALVE COMBINED AREA 19.24 □"

FOR DETAIL OF BOTTOM HEAD STAY SEE DWG # 0-862-3

2 AS DRAWN { STB'D CENTER
TO OTHER HAND FOR PORT

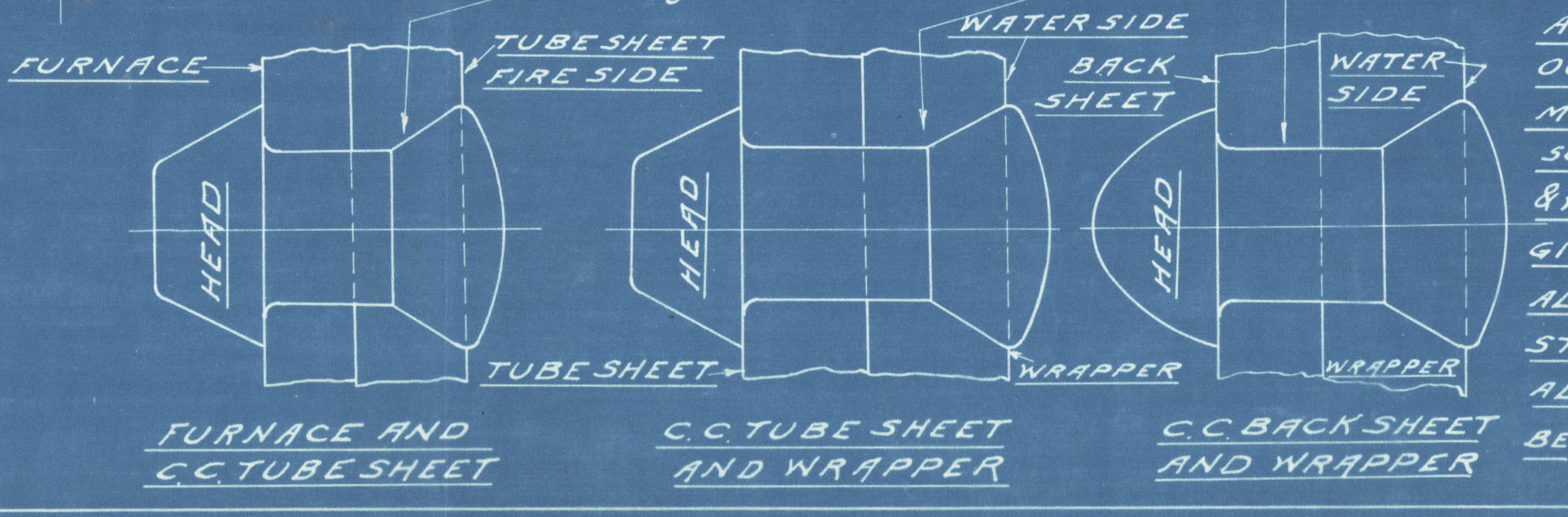




NOTE

ALL CAULKING EDGES OF BOILER PLATE TO BE MACHINE PLANED SEAMS BUTTS AND LAPS TO FIT CLOSELY DRAWN UP METAL TO METAL AND AFTER BEING RIVETED CAULKED INSIDE AND OUTSIDE. ALL REINFORCE PLATES TO BE CAULKED.

12 FT 1 3/8" OVER HEADS



FURNACE AND C.C. TUBE SHEET

C.C. TUBE SHEET AND WRAPPER

C.C. BACK SHEET AND WRAPPER

ALL SCREW STAYS W.I.
OUTSIDE SCREW STAYS ON BACK HEAD 2" DIA MARKED THUS ◎ NET AREA 2.68 SQ. IN
SCREW STAYS ON BACK HEAD MARKED THUS ○ & WRAPPER SCREW STAYS 1 3/4" DIA NET AREA 1.997 □"
GIRDER SCREW STAYS 1 3/4" DIA, NUTS 1 3/4" & 1 1/4" DEEP
ALL SCREW STAYS EXCEPTING GIRDER SCREW STAYS ARE RIVETED OVER BOTH ENDS
ALL SCREW STAYS TO HAVE 3/16" HOLE DRILLED 1/2" BEYOND INNER SURFACE OF PLATE

Phl 4213.

ARH 2/10/20

SUN SHIPBUILDING CO. CHESTER, PA. BLUE PRINT ROOM 5 27 AUG 1920 LLOYDS

BLUE PRINTS					
PRT NO	DEPT	NO PRTS	PRT NO	DEPT	NO PRTS
			1-2	LOC. INS	2
			3-6	LLOYDS	4
				27 Aug	

APPROVED LLOYDS REGISTER OF SHIPPING SEP 7 1920 NEW YORK

SUN SHIPBUILDING COMPANY
CHESTER, PENNA., U.S.A.
ENGINEERING DEPARTMENT.

15 FT 10 INS. DIA. x 11 FT 11 1/4" BETW. HEADS
S.E. SCOTCH BOILER
200 LBS. WORKING PRESSURE

DRAWN BY J.B. — CHIEF DRAFTSMAN E. J. Cunliffe
TRACED BY J.B.
CHECKED BY K.P.R. — APPROVED A. A. Howitt
DATE 26 Aug 20
SCALE 1" = 1 Ft. — CHIEF ENGINEER

DR. 39-862-1

4181-0104

G. N. Pew

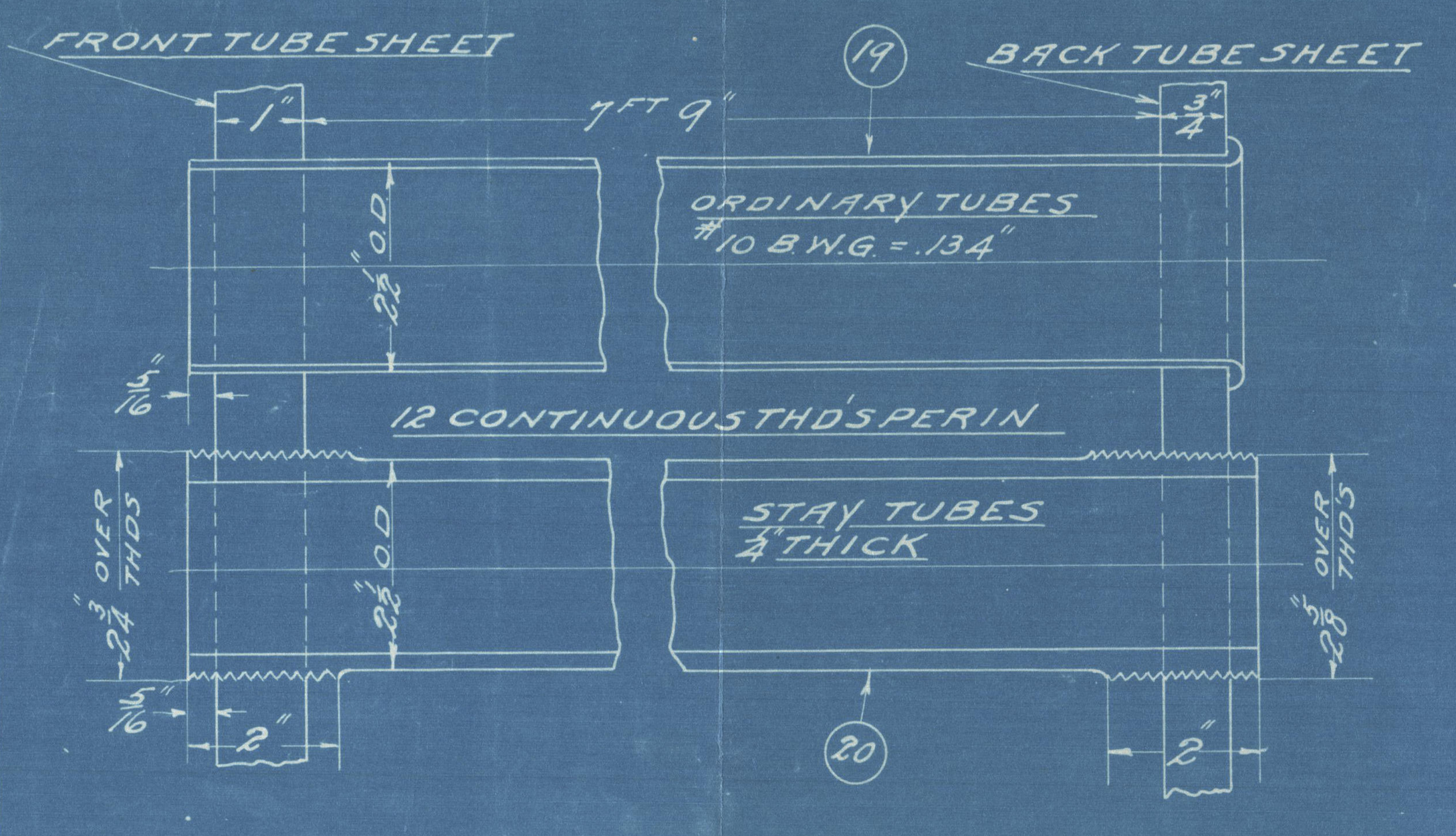
Phl 4213.

Suma

No. 39.

1st S/S G. N. Pew

4181-0104



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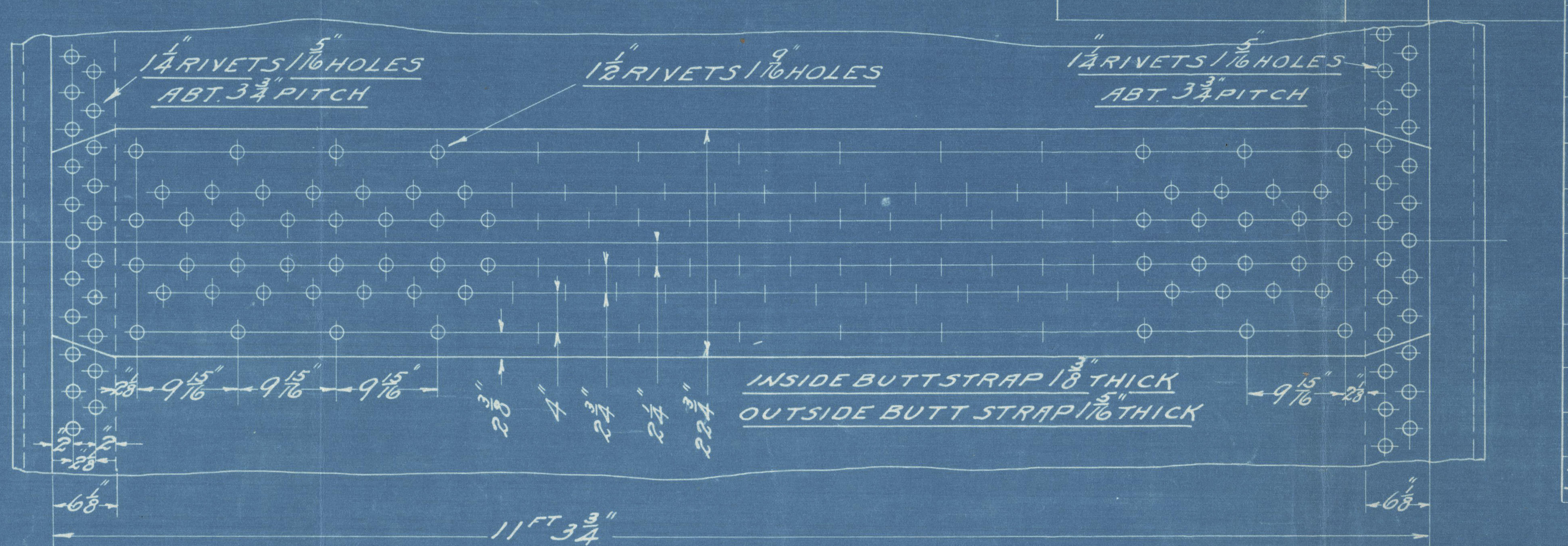
RIVET % $\frac{5 \times 1.917 \times 1.75 \times 85}{9.9375 \times 1.59375} \times 100 = 90.\%$



ALTERATIONS	DATE APPROVED

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TOP HEAD STAY	2 13/16"	$S = \frac{16.875 \times 16 \times 200}{6.2126} = 8692$#	$P = \frac{10400 \times 6.2126}{16.875 \times 16} = 239$#	BACK TUBE PLATE	55 ф
TUBE PLATE	3/4"	$P = \frac{(3.75-2.23) \times .75 \times 27000}{40 \times 3.75} = 205$#	$P = \frac{3.75-2.23 \times 1750 \times 12}{40 \times 3.75} = 212.8$#	TOTAL H.S.	3066 ф
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BOTTOM COMB. CH.	1"	$\frac{50[(300 \times 1)-(2 \times 36.5)]}{54.5} = 208$#	$P = \frac{50(300 \times 1-40}{54.5} = 238$#		
WIDE WATER SPACE FRONT	1"		$P = \frac{140 \times 16^2}{13^2} = 212$#		

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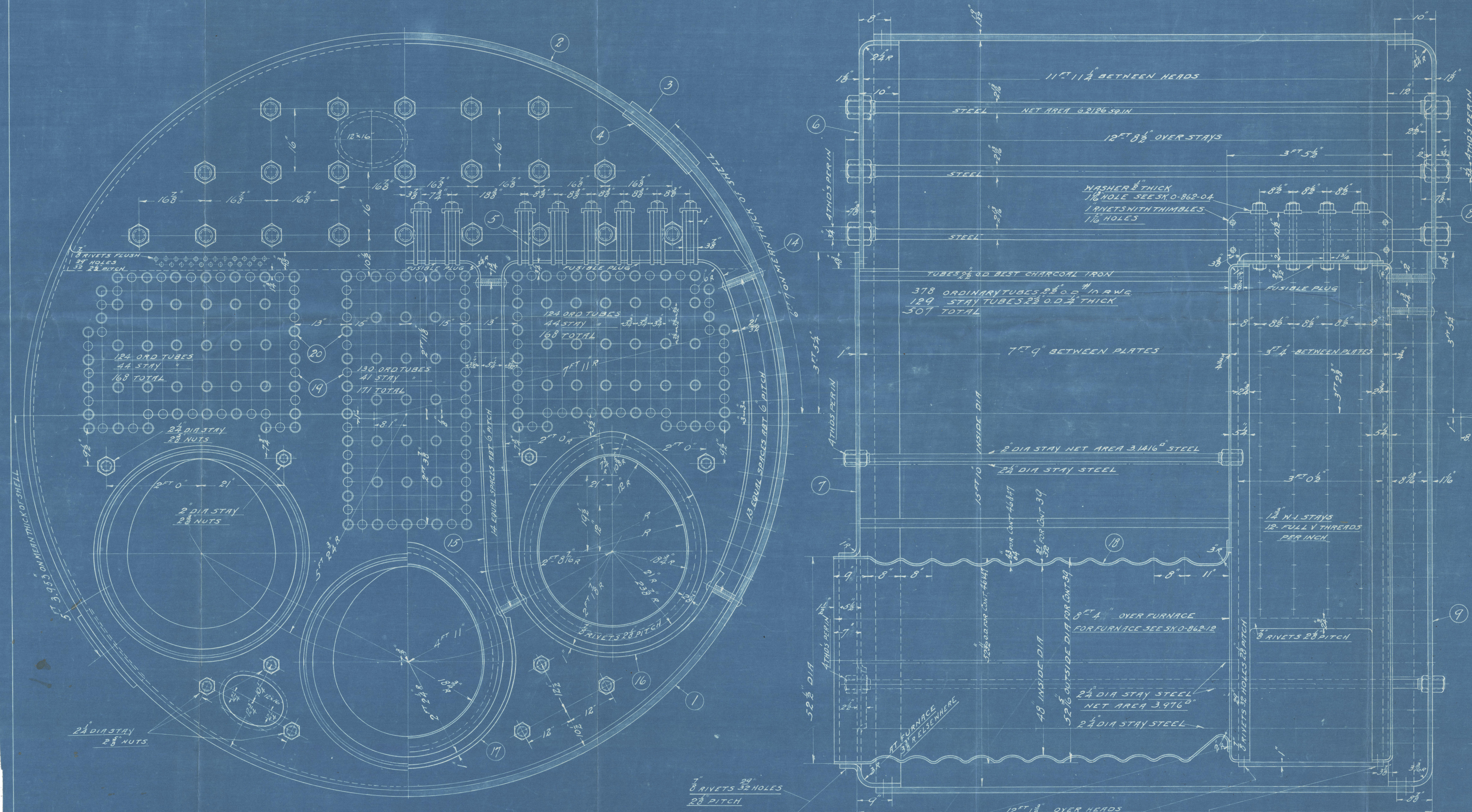
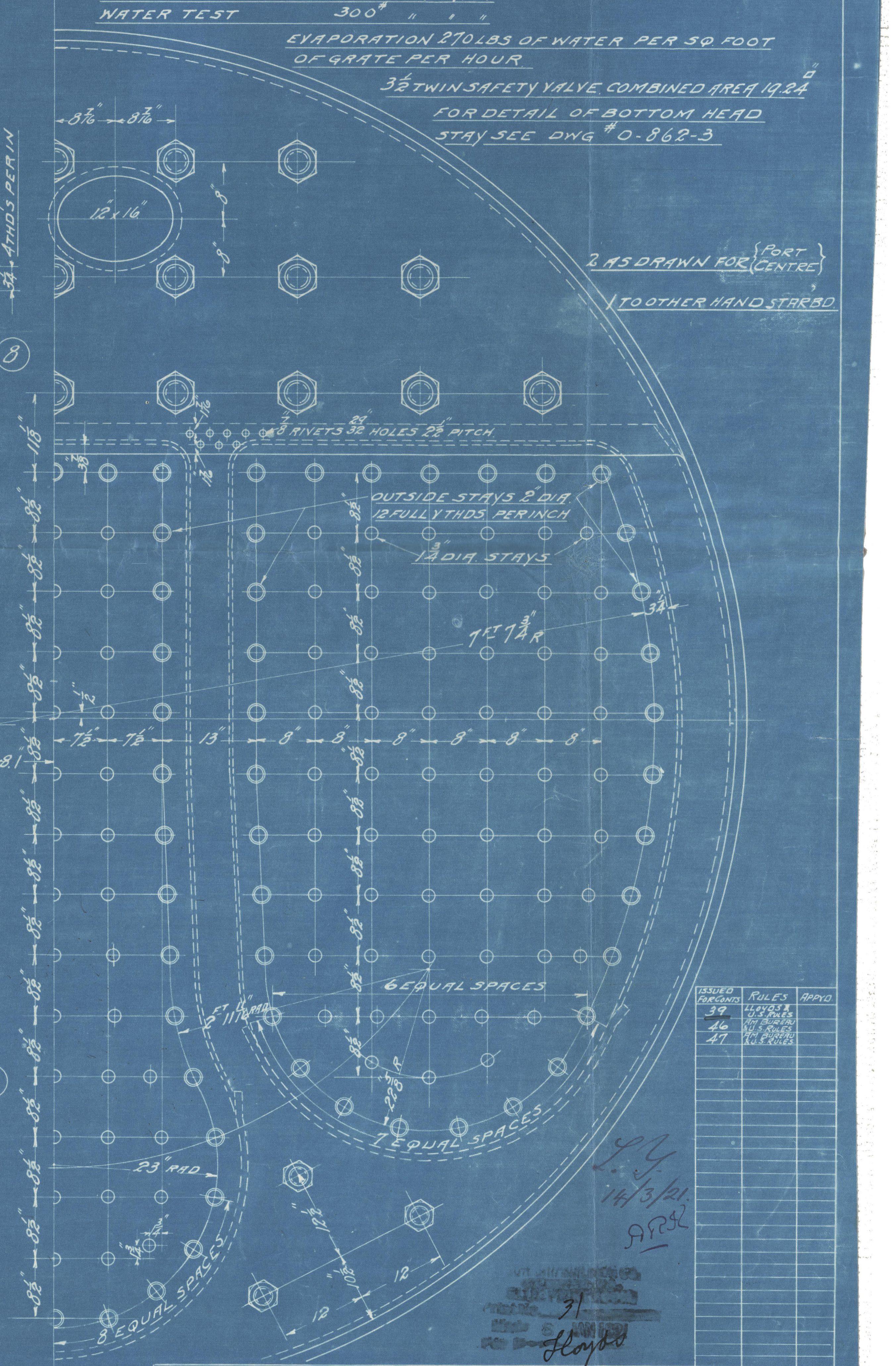
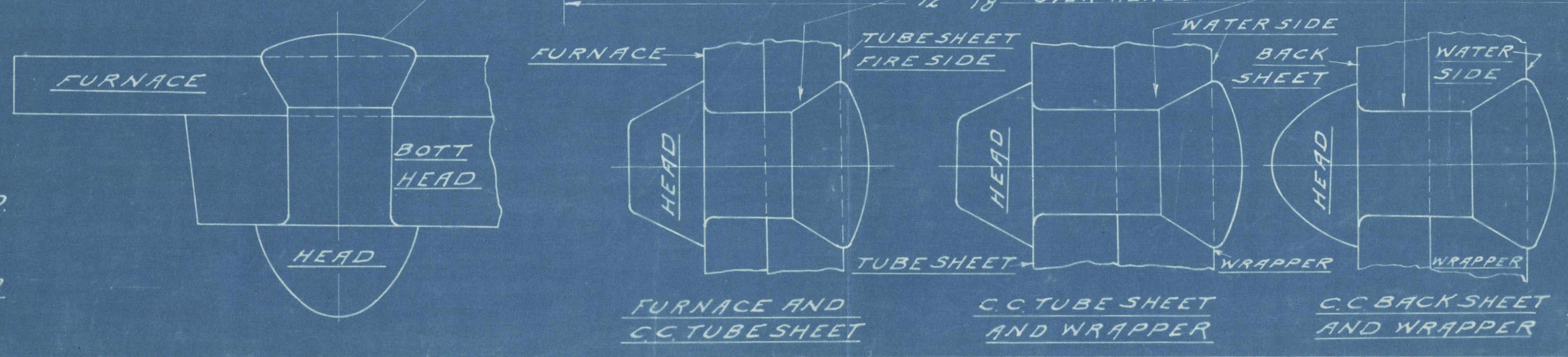




NOTE
ALL CAULKING EDGES OF BOILER PLATE TO BE MACHINE PLANED SEAMS, BUTTS AND LAPS TO FIT CLOSELY, DRAWN UP METAL TO METAL AND AFTER BEING RIVETED CAULKED INSIDE AND OUTSIDE.
ALL REINFORCE PLATES TO BE CAULKED.



ALL SCREW STAYS W.I.
OUTSIDE SCREW STAYS ON BACK HEAD 2" DIA MARKED THUS ◎ NET AREA 2.68 SQ. IN
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BLUE PRINTS

APPROVED
LLOYD'S REGISTER OF SHIPPING
JAN 13 1921
NEW YORK

SUN SHIPBUILDING COMPANY
CHESTER, PENNA., U.S.A.
ENGINEERING DEPARTMENT
15 FT 10 INS. DIA. x 11 FT 11 1/4" BETW. HEADS
S.E. SCOTCH BOILER
200 LBS. WORKING PRESSURE

DRAWN BY J.B.
TRACED BY J.B.
CHECKED BY K.P.R.
DATE 26 Au 20
SCALE 1" = 1 Ft.
CHIEF DRAFTSMAN E. J. Cunliffe
APPROVED A. A. Howitt CHIEF ENGINEER

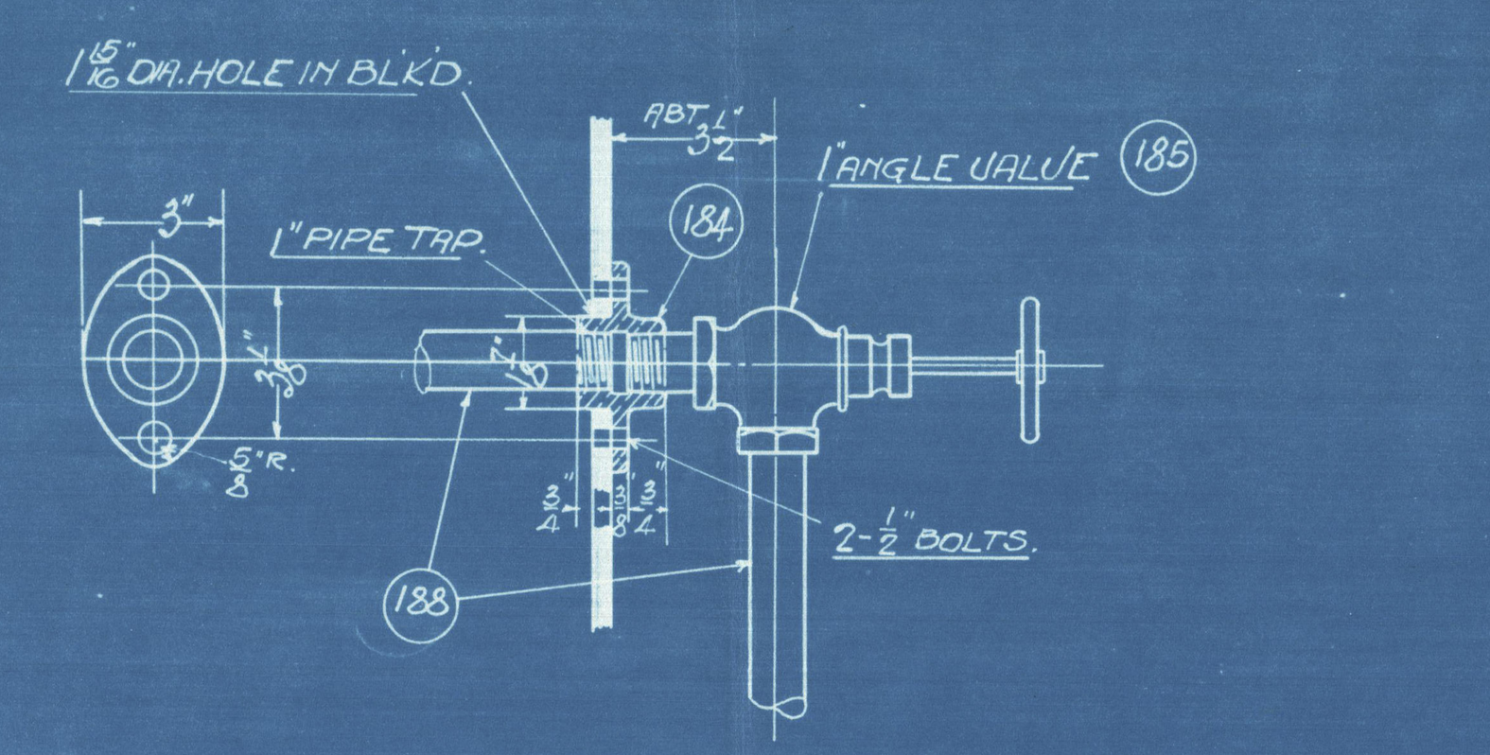
DR 39-862-1

4010-1811A

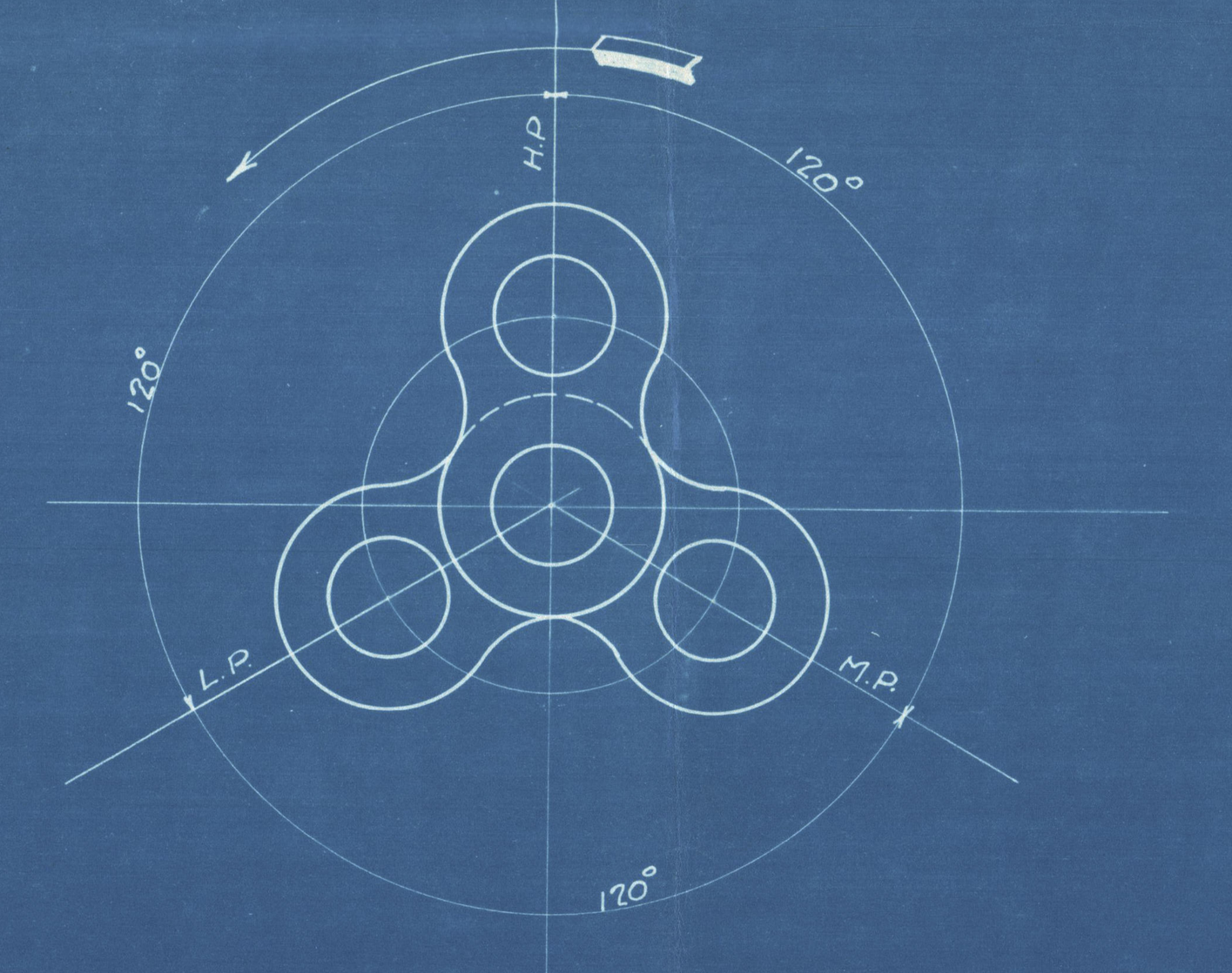
Serv S. 73.

Arrgt of Shafting

W181-0100



DETAIL OF WATER CIRCULATING CONNECTION.



VIEW SHOWING SEQUENCE OF CRANKS LOOKING AFT

SIZE OF ENGINE - $\frac{27'' \times 45\frac{1}{2}'' \times 76''}{51''}$

BOILER PRESSURE - 200 LBS.

DIA. OF PROPELLER - 19 FT 0"

FIGURES ON SHAFTING BY LLOYD'S RULES FOR SHAFTING

DIAM. OF INTERMEDIATE SHAFT

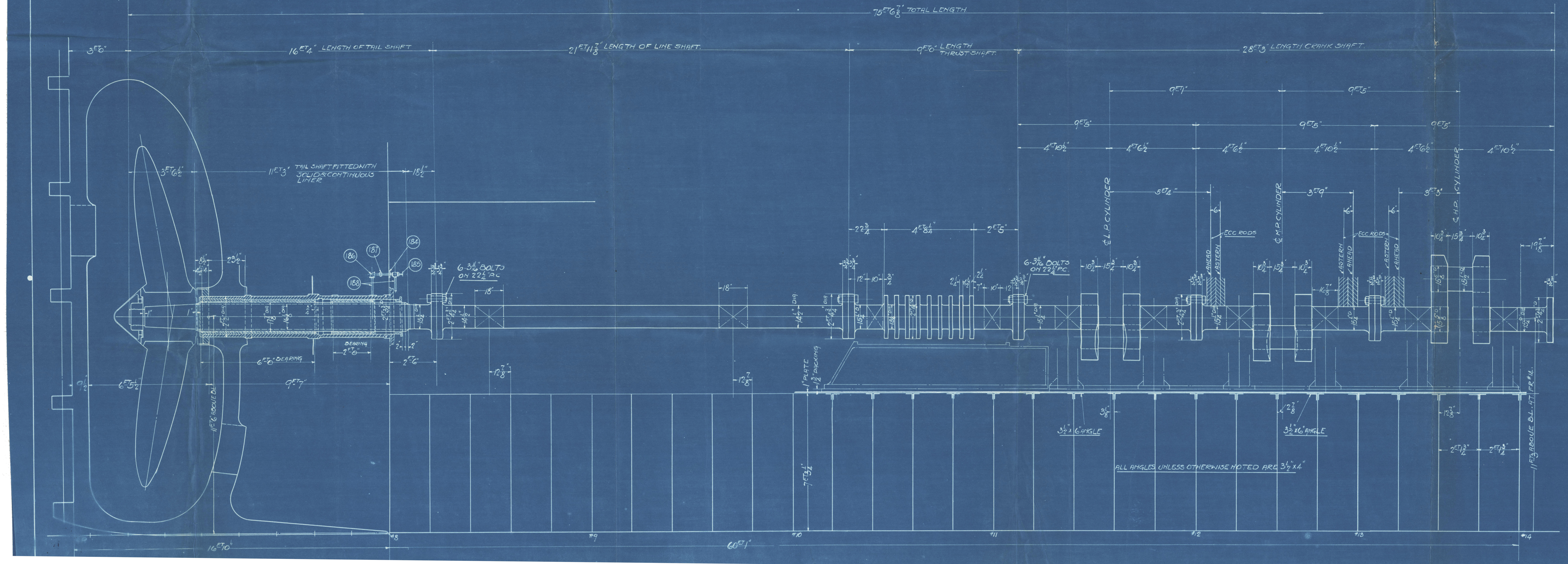
$(.038 \times 27 + .009 \times 45.5 + .002 \times 76 + .0165 \times 51) \times \sqrt[3]{200} = 14.2''$ DIA. MADE - $14\frac{1}{2}''$ DIA.

DIAM. OF CRANK & THRUST SHAFT UNDER COLLARS.

$\frac{14.2'' \times 21}{20} = 14.9''$ DIA. - MADE $15\frac{1}{4}''$ DIA.

DIAM. OF TAIL SHAFT.

$14.2 \times (.63 + \frac{.03 \times 228}{14.2}) = 15.76$ - MADE $16\frac{1}{8}''$ DIA.



LIST OF DETAIL DRAWINGS	
TITLE	DR. NO.
LINE SHAFT FORGINGS	39-842-1
STERN TUBE	37-842-3
DETAILS OF SHAFTING	39-842-3
THRUST BEARING	1-840-7
THRUST BEARING BED PLATE	1-840-9
HORSE SHOE BEARING	1-840-4
LINE SHAFT BEARING	1-840-8
CRANK SHAFT.	39-814-2

SHIPBUILDING ... CHESTER ... BLUE PRINT ROOM 4 2 SEP 1920 LLOYDS

NO. OF PIECES	PC. NO.	NAME OF PART	MAT'L.	PATT. NO.	REMARKS	DR. NO.
5 FT 0"	188	1" PIPE	BRASS		W.I. PIPE SIZE. LENGTH TO SUIT WORK	39-842-2
1	187	1" UNION SCR'D.	"		ROUGH. STD. SHORT HEX.	"
1	186	1" ELL "	"		"	"
1	185	1" ANGLE VALVE "	"		ROUGH. SIM. TO FIG. #72 PAGE 62. LUNKENHEIMER CAT. 1912	"
1	184	2 BOLT FLANGE	COMP. G.	1-820-1	TAPPED FOR 1" PIPE	"

PRT. NO.	DEPT.	NO. PRT.	PRT. NO.	DEPT.	NO. PRT.
V-4	LLOYDS	4			
	8	2			
	36	2			
	38	1			
	78	1			
	97	1			

CONT.	B/M NUMBER	DATE	APP.
39	39-820-9	2 Sept 20	E.J.C.

SUN SHIPBUILDING COMPANY.
CHESTER, PENNA. U.S.A.
ENGINEERING DEPARTMENT

ARRANGEMENT OF SHAFTING.

DRAWN BY WAM
TRACED BY WAM.
CH'K'D BY Cunliffe
DATE 2 September 20
SCALE 1/2" & 3" = 1 FT.

CHIEF DRAFTSMAN E. J. Cunliffe
APPROVED A. A. Horwitz
CHIEF ENGINEER

DR. 39-842-2